Data Evaluation Report

C008615

Compound Tribufos (DEF)

Citation

A teratogy study with DEF technical in the rabbit. G.R. Clemens, J.J. Bare and R.E. Hartnagel Jr. Miles Laboratories Inc. Laboratory Report No. MTD0003, #94468, Jan 22, 1987, MRID 401906-02

1/30/90

Reviewed by Robert P. Zendzian Ph.D.
Senior Pharmacologist

Core Classification Guideline

Conclusions

Pregnant rabbits were dosed at 0, 1, 3 or 9 mg/kg/day, days 7-19. Plasma and RBC cholinesterase activity was significantly reduced at all doses on day 20 and RBC at all doses on day 28. Does failed to gain weight at 9 mg/kg/day during dosing. Maternal toxicity LEL 9 mg/kg/day, NOEL 3 mg/kg/day. Fetal toxicity NOEL 9 mg/kg/day (HDT).

Materials

DEF technical
98% active
Batch No. 85-R-26-39 supplied by Mobay Corp.

American Dutch Rabbits from Langshaw farms

Experimental Design

Young adult female rabbits (> 4.5 months) weighing 2.32 to 3.51 kg were primed with HCG and artificially inseminated over a four day period. Does were ranbomly assigned to treatment groups of control, 1, 3, or 9 mg/kg/day, 17 does per group.

The test compound was prepared as a 0.022, 0.067 or 0.2% emulsion in an aqueous CMC (0.5% w/v carboxymethycelulose and 0.4% w/v polysorbate 80 in distiled water) vehicle. Solutions were analyzed for concentration and stability. Test material was administered in a constant volume of 4.5 ml/kg body weight.

Test material was administered orally on days 7 through 19 of gestation.

Does were observed daily for morbidity and morality.

Body weights were abtained on days 0, 7, 10, 14, 19, 21 and 28 of gestation. Food consumption was measured on days 1, 6, 8, 12, 15, 20, 23 and 28 of gestation.

On day 20 of gestation (24 hours after the last dose of test compound) and on day 28 blood was obtained for RBC and plasma cholinesterase determinations. At termination, on day 28, half the brain of each doe was collected for brain cholinesterase determination.

"On day twenty-eight of gestation, all does were sacrificed by intravenous barbiturate overdose. The abdomen was opened, ovaries were excised and corpora lutea were counted and recorded. The uterine horns were transected at the cervix, removed, and weighed. Each uterine horn was longitudinally opened along the antimesometrial surface and the amniotic sacs displaced to one side to facilitate inspection of the uterine walls for the presence of resorptions. All fetuses and resorptions were removed and each implant was noted. The abdominal and thoracic viscera from the does were scrutinized and gross anatomical changes were recorded."

Each fetuses was removed from its amniotic sac, the umbilical cord was severed close to its attachment to the fetus and viability of the fetus was determined. Placentas were removed, trimmed and weighed. Each fetus was blotted dry, removing blood and amniotic fluid and weighed. A complete external examination was made of each fetus. ------A complete internal examination was conducted on the thoracic and abdominal viscera and sex was determined for all fetuses." The head was skinned to view the eyes and a cross section made through the cerebrum.

All fetuses were prepared and examined for bone development and abnormalities.

Results

Clinical signs related to treatment were not observed. Two low dose does and one high dose doe died of resporatory disease. One low dose doe and one high dose doe aborted during the study.

Mean group body weights are summarized in Table 1 from the report. A statistically significant decrease in mean weight gain was observed in the high dose does during dosing. These does failed to gain weight during this period. No compound-related effects were observed on food consumption.

Results of cholinesterase determinations are summarized in Table III from the report. Plasma and RBC cholinesterase activity was significantly depressed at 20 days of gestation in all dose groups. At 28 days RBC cholinesterase activity remained significantly depressed at all doses. No compound-related effect was observed in the brain at termination.

Table IV from the report summarizes reproduction efficiency and fetal numerical data. No compound-related effects were observed on fertility, implantations, litter size, sex ratio. and pre and post implantation loss.

Table V from the report summarizes resorption data. Treatment had no observed effect on resorptions.

Table VI from the report summarizes external and visceral observations. No treatment-related effects were reported.

Table VII from the report summarizes skeletal variations. No treatment-related effects were reported.

Table VIII from the report is an incidence summary of skeletal variations. No treatment-related effects were reported.

Table IX from the report presents external, visceral and skeletal malformations. No treatment-related effects were reported.

Table I

Mean Body Weights of Pregnant Does[a] During Gestation (kg)

Day	CONTROL Mean	S.E.	N	1.0 mg/kg Mean	S.E.	N	3.0 mg/kg Mean	S.E.	N	9.0 mg/kg Mean	S.E.	N
0	3.01	0.06	16	3.07	0.04	11	3.03	0.04	17	2.99	0.07	13
7	3.10	0.06	16	3.13	0.03	11	3.10	0.04	17	3.00	0.07	13
10	3.13	0.06	16	3.18	0.04	11	3.12	0.04	17	3.00	0.07	13
14	3.19	0.06	16	3.24	0.05	11	3.16	0.04	17	3.00	0.08	13
19	3.24	0.07	16	3.29	0.04	11	3.18	0.05	17	3.10	0.08	13
21	3.25	0.07	16	3.30	0.05	11	3.20	0.05	17	3.00	0.07	13
28	3.33	0.07	16	3.41	0.05	11	3.30	0.05	17	3.22	0.08	13
7-21 GAIN	0.15	0.02	16	0.17	0.02	11	0.10	0.02	17	-0.00**	0.04	13
%GAIN	4.95			5.40			3.15			-0.00		
0-28 GAIN	0.32	0.03	16	0.34	0.04	11	0.27	0.02	17	0.23	0.05	13
%GAIN	10.49			11.24			8.96			7.33		
ACTUAL	2.99	0.08	16	3.04	0.07	11	2.95	0.06	17	2.89	0.09	13
GAIN	-0.03	0.04	16	-0.03	0.05	11	-0.08	0.03	17	-0.11	0.05	13
%GAIN	-0.90			-0.87			-2.62			-3.35		

[a] Includes only does with viable fetuses on Day 28
** Significantly different from control at the .01 level using Dunnett's test

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00031

Table III

Summary of Cholinesterase Data

Mean ± SEM

Contact Day	Dose mg/kg	N	Plasma IU/l	Plasma % Inhibition	Erythrocyte IU/l	Erythrocyte % Inhibition
28	0	16	400.8 ± 13.4	-	827.2 ± 87.2	-
28	1	13	238.5 ± 12.8*	40.5	298.7 ± 33.8*	63.8
28	3	17	183.1 ± 8.7*	54.3	126.8 ± 25.8*	84.8
28	9	13	131.4 ± 11.8*	67.2	61.5 ± 21.8*	92.6
28	0	16	296.5 ± 12.6	-	910.0 ± 60	-
28	1	12	229.8 ± 26.2	7.5	518.8 ± 88*	64.8
28	3	17	227.4 ± 15.9	7.7	388.8 ± 58*	37.5
28	9	13	213.2 ± 15.7	13.5	344.8 ± 38*	48.2

Contact Day	Dose mg/kg	N	Brain IU/g	Brain % Inhibition
28	0	16	3224 ± 127	-
28	1	12	3325 ± 160	0
28	3	17	3407 ± 123	0
28	9	13	3080 ± 157	4.5

* Significantly different from control at p less than or equal to 0.05 using Dunnett's test

Table IV

Reproductive Efficiency and Fetal Data

		Control	1.0 mg/kg	3.0 mg/kg	9.0 mg/kg
No. of Pregnant Dams/Total		16/17	15/17	17/17	15/17
Fertility Index[a]		94.1	88.2	100	88.2
Gestation Index[b]		100	93.3	100	100
No. of Litters		16	11	17	13
No. with Resorption Sites Only		0	1	0	0
No. of Deaths Among Dams		0	2	0	1
No. of Dams Which Aborted		0	1	0	1
No. of Corpora Lutea	Median	8.5	8.0	9.0	9.0
	Mean	8.2	7.8	9.1	7.7
	(Range)	(2-12)	(1-11)	(6-13)	(3-13)
Total No. of Implantations		124	91	131	96
	Median	8.0	8.0	9.0	9.0
	Mean	7.8	7.6	7.7	7.4
	(Range)	(2-14)	(1-11)	(3-13)	(1-12)
Total No. of Fetuses		115	85	119	87
Litter Size	Median	7.0	7.5	8.0	8.0
	Mean	7.2	7.1	7.0	6.7
	(Range)	(2-13)	(0-11)	(3-11)	(1-10)
Median Percent Male Fetuses		50.0	40.0	62.5	33.3
Median Wt. Viable Fetuses (gm)	(Male)	34.7	34.3	35.6	36.4
	(Female)	32.6	32.9	34.3	36.0
	(Combined)	34.7	34.1	35.2	35.8
Median Wt. of Placentas		5.1	5.4	5.0	5.6
No. of Resorption Sites	Median	0.0	0.0	0.0	0.0
	Mean	0.6	0.5	0.7	0.7
	(Range)	(0-2)	(0-2)	(0-4)	(0-3)
Total No. of Dead Fetuses		0	1	1	1
	(Range)	(0-0)	(0-1)	(0-1)	(0-1)
% Pre-implantation Loss	Median	0.0	0.0	0.0	0.0
	Mean	12.2	6.6	20.2	12.4
	(Range)	(0-55.6)	(0-37.5)	(0-76.9)	(0-66.7)
% Post-implantation Loss	Median	0.0	6.5	0.0	9.1
	Mean	8.3	14.2	8.6	9.6
	(Range)	(0-40.0)	(0-100)	(0-36.4)	(0-28.6)

[a]Fertility Index: ratio of number of pregnant dams/number of dams with successful copulation

[b]Gestation Index: ratio of number of dams with live progeny/number of pregnant dams

Table V

Distribution of Resorptions in Does

No. of Resorptions	Number of Does with Resorptions			
	Control	1.0 mg/kg	3.0 mg/kg	9.0 mg/kg
0	9	7	10	7
1	5	4	4	4
2	2	1	2	1
3	0	0	0	1
4	0	0	1	0
Total No. of Resorptions	9	6	12	9
No. of Does with More than 1 Resorption	2	1	3	2
Percent with Resorptions	43.8	41.7	41.2	46.2

Table VI

External and Visceral Findings on
Fetuses at Termination (Day 28)

Dose[a]	Dam No.	Fetus No.	Observation
Control	R5868	28	Runt (<20.0 g)
	R5885	288	Runt (<20.0 g)
		296	Runt (<20.0 g)
	R5918	333	Cardiovascular anomaly. Aorta ascends straight toward head branching into two carotids; just below where it branches, the aorta arches in an acute fashion dorsally with the right subclavian branching off, aorta then angles acutely to the left beneath the trachea and assumes its normal path
1.0	R5880	119	Non-viable; partially autolysed but normal for stage of development (10.8 g)
	R5890	309	Left forepaw, downward malrotation
		312	Anterior forepaws, downward malrotation; encephalmia; nares, abnormal; frontals, pinched together at orbits; testis, small right
		313	Brain, dilated ventricles with fluid
	R5892	315	Runt (<20.0 g)
		317	Runt (<20.0 g)
3.0	R5853	72	Brain, microcephaly with fluid within cranium
	R5898	223	Liver, median lobe, 1 x 1 mm tannish foci, extending into parenchyma
	R5910	365	Adrenal, displaced toward the midline, left
		369	Non-viable; partially autolysed, normal for stage of development (3.4 g)
9.0	R5863	109	Posterior appendages, inward malrotation, bilateral; tail, kinked; digits, malformure
	R5872	164	Digit, missing nail 1, left forepaw
		165	Left carotid artery reduced in size, branches off innominate artery opposite right carotid artery
		168	Digit missing nail 1, bilateral forepaw
		169	Digit missing nail 1, bilateral forepaw
	R5877	175	Runt (<20.0 g)
	R5896	265	Ovary, missing left
	R5906	335	Non-viable; partially autolysed, normal for stage of development (13.2 g)

[a] mg/kg

Table VII

Fetuses with One or More Skeletal Variations

DOSE:	CONTROL		1.0 MG/KG		3.0 MG/KG		9.0 MG/KG	
NO. OF SPECIMENS EXAMINED:	119		89		119		89	
VARIATION AND/OR ABNORMALITY	NO.	%	NO.	%	NO.	%	NO.	%
SKULL: BONES INCOMPLETELY OSSIFIED	17	14.8	13	15.5	12	10.2	13	15.1
SKULL: SUTURES ENLARGED			1	1.2			1	1.2
SKULL: SUTURES FUSED			3	3.6	2	1.7		
SKULL: SUTURES IRREGULARLY SHAPED					1	0.8		
SKULL: FONTANELLE ENLARGED	13	11.3	9	10.7	10	8.5	9	10.5
SKULL: FONTANELLE IRREGULARLY SHAPED					1	0.8		
SKULL: PRESENCE OF CALCIFIED BODY			1	1.2	7*	5.9	2	2.3
SKULL: BONES ABNORMAL			1	1.2	1	0.8		
SKULL: UPPER INCISORS MISSING					1	0.8		
SKULL: IRREGULAR NASAL					1	0.8		
HYOID: VARIATIONS OF HYOID BODY OR ARCH	64	53.7	37	44.0	55	46.6	51	59.3
SKULL: ANGULATED HYOID ARCH			1	1.2	2	1.7	2	2.3
RIBS: EXTRA RIBS	13	11.3	9	10.7	15	12.7	10	11.6
RIBS: INCOMPLETELY OSSIFIED					1	0.8	1	1.2
RIBS: WAVY OR CURVED			1	1.2				
RIBS: BULBOUS OR SPUR			1	1.2				
RIBS: SMALL					1	0.8	1	1.2
RIBS: ABNORMAL POSITION					2	1.7		
RIBS: FLOATING 13TH RIB							2	2.3
VERTEBRAE: CERVICAL-CENTRA INCOMP. OSS.							1	1.2
VERTEBRAE: CERVICAL-CENTRA UNOSSIFIED	1	0.9						
VERTEBRAE: CERVICAL-CENTRA EX OSSIF CNT					1	0.8		
VERTEBRAE: CERVICAL-CENTRA FUSED TO ARCH	1	0.9						
VERTEBRAE: CERVICAL-CENTRA MALPOSITIONED	1	0.9						
VERTEBRAE: CERVICAL-CENTRA IRREGULAR	1	0.9						
VERTEBRAE: THORACIC-CENTRA INCOMP. OSS.					1	0.8		
VERTEBRAE: THORACIC-CENTRA FUSED					1	0.8		
VERTEBRAE: THORACIC-ARCH MALPOSITIONED					1	0.8		
VERTEBRAE: THORACIC-ARCH UNALIGNED					1	0.8		
VERTEBRAE: THORACIC-CENTRA MALPOSITION					1	0.8		
VERTEBRAE: LUMBAR-ARCHES EXTRA	5	4.3	3	3.6	1	0.8	2	2.3
VERTEBRAE: LUMBAR-ARCHES MISSING	1	0.9			1	0.8		
VERTEBRAE: LUMBAR-ARCH UNALIGNED					1	0.8		
VERTEBRAE: SCOLIOSIS					1	0.8		
VERTEBRAE: LUMBAR-CENTRA FUSED					1	0.8		
VERTEBRAE: LUMBAR-CENTRA EXTRA	5	4.3	3	3.6	1	0.8	2	2.3
VERTEBRAE: LUMBAR-CENTRA MISSING	1	0.9						
VERTEBRAE: SACRAL-ARCHES MISSING	5	4.3	3	3.6	1	0.8	2	2.3
VERTEBRAE: SACRAL-ARCHES SHIFT	4	3.5	2	2.4			1	1.2
VERTEBRAE: SACRAL-CENTRA EXTRA	1	0.9						
VERTEBRAE: SACRAL-CENTRA MISSING	4	3.5	3	3.6	1	0.8	2	2.3
VERTEBRAE: CAUDAL-ARCHES FUSED					1	0.8		
VERTEBRAE: CAUDAL-ARCH ABNORMAL			1	1.2	1	0.8		
VERTEBRAE: CAUDAL-ARCH EX OSSIF CNT					1	0.8		
VERTEBRAE: CAUDAL-CENTRA ABNORMAL			1	1.2	1	0.8	1	1.2
VERTEBRAE: CAUDAL-CENTRA INCOMP. OSS.							2	2.3
VERTEBRAE: CAUDAL-CENT A FUSED					1	0.8		
PELVIS: ILIUM INCOMPLETELY OSSIFIED	1	0.9						
PELVIS: ILIUM UNALIGNED	5	4.3	2	2.4			1	1.2
PELVIS: ISCHIUM-UNALIGNED	1	0.9	2	2.4			1	1.2
PELVIS: PUBIS UNOSSIFIED	1	0.9						
PELVIS: PUBIS INCOMPLETELY OSSIFIED	7	6.1	5	6.0	2	1.7	6	7.0

* Significantly different from control at the 0.05 level

Table VII

Fetuses with One or More Skeletal Variations

DOSE:	CONTROL		1.0 MG/KG		3.0 MG/KG		9.0 MG/KG	
NO. OF SPECIMENS EXAMINED:	115		94		118		86	
VARIATION AND/OR ABNORMALITY	NO.	%	NO.	%	NO.	%	NO.	%
STERNEBRAE: 1ST-INCOMPLETELY OSSIFIED	9	7.8	3	3.6	4	3.4	3	3.5
STERNEBRAE: 1ST-ASYMMETRICAL			1	1.2			1	1.2
STERNEBRAE: 1ST-EXTRA OSSIF CENTER			1	1.2	1	0.8		
STERNEBRAE: 1ST- IRREGULAR	1	0.9	1	1.2	1	0.8	1	1.2
STERNEBRAE: 2ND-INCOMPLETELY OSSIFIED	8	7.0	13	15.5	13	11.0	9	10.5
STERNEBRAE: 2ND-ASYMMETRICAL			1	1.2			1	1.2
STERNEBRAE: 2ND-BIPARTITE			1	1.2				
STERNEBRAE: 3RD-INCOMPLETELY OSSIFIED	1	0.9						
STERNEBRAE: 3RD-ASYMMETRICAL			1	1.2			2	2.3
STERNEBRAE: 3RD- FUSED TO 4TH							1	1.2
STERNEBRAE: 4TH-INCOMPLETELY OSSIFIED	8	7.0	1	1.2	2	1.7	0*	
STERNEBRAE: 4TH-ASYMMETRICAL			1	1.2			2	2.3
STERNEBRAE: 4TH- FUSED TO 5TH	1	0.9	2	2.4			2	2.3
STERNEBRAE: 5TH-UNOSSIFIED	18	15.7	3*	3.6	4**	3.4	2**	2.3
STERNEBRAE: 5TH-INCOMPLETELY OSSIFIED	75	65.2	66	78.6	92	78.0	70*	81.4
STERNEBRAE: 5TH-ASYMMETRICAL			1	1.2			1	1.2
STERNEBRAE: 5TH-BIPARTITE	2	1.7			1	0.8		
STERNEBRAE: 6TH-UNOSSIFIED	3	2.6						
STERNEBRAE: 6TH-INCOMPLETELY OSSIFIED	16	13.9	11	13.3	2**	1.7	14	16.3
STERNEBRAE: 6TH- BIFURCATED PROCESS	2	1.7	1	1.2	1	0.8		
STERNEBRAE: 6TH- IRREGULAR			1	1.2	5	4.2		
SCAPULA: IRREGULAR SPINOUS PROCESS	4	3.5	3	3.6				
CLAVICLE: INCOMPLETELY OSSIFIED	1	0.9						
APPENDAGES: ANTERIOR-UO METACARPALS	9	7.8	10	11.9	3	2.5	9	10.5
APPENDAGES: ANTERIOR-IO METACARPALS	12	10.4	7	8.3	6	5.1	13	15.1
APPENDAGES: ANTERIOR-MISSING METACARP							3	3.5
APPENDAGES: ANTERIOR-UO PHALANGES			4	4.8				
APPENDAGES: ANTERIOR-IO PHALANGES	1	0.9	3	3.6			4	4.7
APPENDAGES: ANTERIOR MISSING PHALANG							3	3.5
APPENDAGES: POSTERIOR-UNOSSIFIED TALUS	4	3.5						
APPENDAGES: POSTERIOR-IO TALUS	7	6.1	2	2.4	4	3.4	4	4.7
APPENDAGES: POSTERIOR-IO METATARSALS	1	0.9						
APPENDAGES: POSTERIOR-UO PHALANGES			2	2.4	1	0.8	2	2.3
APPENDAGES: POSTERIOR-IO PHALANGES	3	2.6	6	7.1			1	1.2

* Significantly different from control at the 0.05 level
** Significantly different from control at the 0.01 level

Table VIII

Incidence Summary of Skeletal
Malformations and Selected Variations

		Litter Incidence (%)	Fetal Incidence (%)
Control	N:	16	115
Malformations		3 (18.8)	3 (2.6)
Variations			
Extra Ribs		6 (37.5)	13 (11.3)
Additional Pre-Sacral Vertebrae		6 (37.5)	9 (7.8)
1.0 mg/kg	N:	11	84
Malformations		2 (18.2)	5 (6.0)
Variations			
Extra Ribs		5 (45.5)	9 (10.7)
Additional Pre-Sacral Vertebrae		3 (27.3)	5 (6.0)
3.0 mg/kg	N:	17	118
Malformations		5 (29.4)	5 (4.2)
Variations			
Extra Ribs		9 (52.9)	15 (12.7)
Additional Pre-Sacral Vertebrae		1 (5.9)	1 (0.8)*
9.0 mg/kg	N:	13	86
Malformations		5 (38.5)	8 (9.3)
Variations			
Extra Ribs		4 (30.8)	10 (11.6)
Additional Pre-Sacral Vertebrae		3 (23.1)	3 (3.5)

* Significantly different from control at the 0.05 level (Fisher's)

Tox Chem No. Tribufos (DEF) File Last Updated _____ Current Date _____

Study/Lab/Study #/Date	Material	EPA MRID No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX Category	CORE Grade/ Doc. No.
Onco-mouse; Mobay; 86-271-01	Tech 98.9%	411710-01	Doses tested 0, 10, 50 or 250 ppm for 90 weeks. At 10 ppm, decreased plasma and RBC cholinesterase both sexes, decreased brain cholinesterase males, at 78 weeks males decreased MCV and MCH, at week 90 females decreased hematocrite. At 50 ppm, males increased number showing paleness and hunched backs, at 78 weeks males decreased MCV and MCH, at week 90 decreased MCH, at week 90 females decreased RBC count, hemoglobin and hematocrite. Histopathology males; adrenals amyloid, epididymis hyperspermatogenensis, small intestine amyloid and vacuolar degeneration epithelium, spleen hematopoiesis. At 250 ppm loose stools females, enlarged abdomen both sexes, increased mortality/decreased life span both sexes, increased food consumption and body weight both sexes, decreased RCB count, hemoglobin, hematocrite, MCV and MCH in males, decreased RCB count, hemoglobin and hematocrite in females. Histopathology males, adrenals degeneration, liver hemangiosarcoma*, rectum acute inflammation, necrosis and ulcer, small intestine adenocarcinoma*, dilated/ distended and mucosal hyper-plasis. In females, adrenals calcification and degeneration/ pigmentation, caecum edema, liver hypertropy, lung alveolar/bronchiolar adenoma*, mesenteric lymph node congestion, rectum acute inflamation, necrosis and ulcer, small intestine adenocarcinoma*, dilated/distended, mucosal hyperplasia.	N/A	Guideline

Table 12

External, Visceral and Skeletal Malformations

Dose[a]	Doe No.	Fetus No.	Observation
Control	RS857	17	Sternebrae, 4th segment fused to 5th
	RS874	212	Lumbar arch and centra missing
	RS918	353	Cervical centra: fused to arch, malpositioned, irregular; cardiovascular anomaly: aorta ascends straight toward head branching into two carotids, just below where it branches the aorta arches in an acute fashion dorsally with the right subclavian branching off, aorta then angles acutely to the left beneath the trachea and assumes its normal path
1.0	RS890	306	Sternebrae, 4th segment fused to 5th
		312	Skull bones abnormal; sutures fused; caudal arch and centra abnormal; anophthalmia
		313	Sutures fused; brain, dilated ventricles with fluid
	RS897	397	Sutures fused
		398	Sternebrae, 4th segment fused to 5th
3.0	RS853	72	Skull bones abnormal; sutures fused; upper incisors missing; brain, microcephaly with fluid within cranium
	RS879	143	Sutures fused
	RS883	144	Lumbar arch missing; lumbar centra fused; ribs abnormal position; thoracic arch unaligned; lumbar arch unaligned; scoliosis
	RS901	233	Caudal arch and centra fused, abnormal
	RS908	363	Thoracic centra: fused, malpositioned; thoracic arch malpositioned; ribs abnormal position
9.0	RS863	139	Caudal centra abnormal; tail kinked
	RS872	164	Digit: missing nail 1; metacarpal and phalange missing
		165	Cardiovascular anomaly: left carotid reduced in size, branches off innominate artery opposite right carotid artery
		168	Digit, missing nail 1; metacarpal and phalange missing
		169	Digit, missing nail 1; metacarpal and phalange missing
	RS877	171	Sternebrae, 4th segment fused to 5th
	RS896	265	Ovary, missing left
	RS899	288	Sternebrae, 3rd segment fused to 4th, 4th segment fused to 5th

[a] mg/kg

Tox Chem No. Tribufos (DEF) File Last Updated _____ Current Date _____

Study/Lab/Study #/Date	Material	EPA MRID No.	Results: LD_{50}, LC_{50}, PIS, NOEL, LEL	TOX. Category	CORE Grade/ Doc. No.
Teratology-rat; Miles Laboratories: 87320: 8/8/86	Tech 98%	401906-01	Pregnant rats were dose orally at 0, 1, 7 and 28 mg/kg/day (days 6-16). Maternal RBC and plasma cholinesterase activity was depressed at 7 and 28 mg/kg/day and brain activity at 28 mg/kg/day. Maternal weight gain was decreased at 28 mg/kg/day. Maternal toxicity LEL 7 mg/kg/day, NOEL 1 mg/kg/day. Fetotoxic NOEL 28 mg/kg/day (HDT).	N/A	Guideline
Teratology-Rabbit; Miles Laboratories: MTD0003; 1/22/87	Tech 98%	401906-02	Pregnant rabbits were dosed at 0, 1, 3 or 9 mg/kg/day, days 7-19. Plasma and RBC cholinesterase activity was significantly reduced at all doses on day 20 and RBC at all doses on day 28. Does failed to gain weight at 9 mg/kg/day during dosing. Maternal toxicity LEL 1 mg/kg/day (LDT). Fetal toxicity NOEL 9 mg/kg/day (HDT).	N/A	Guideline

END